

COUNCIL ON FOREIGN RELATIONS

58 EAST 68TH STREET • NEW YORK • NEW YORK 10021
Tel 212 434 9400 Fax 212 434 9875

**“A Manageable Risk:
Assessing the Security Implications of Liquefied Natural Gas and
Recommendations for the Way Forward”**

Written Testimony before

a hearing of the

Subcommittee on Coast Guard and Maritime Transportation
of the Committee on Transportation and Infrastructure
U.S. House of Representatives

on

“The Safety and Security of Liquefied Natural Gas”

by

Stephen E. Flynn, Ph.D.
Jeane J. Kirkpatrick Senior Fellow in National Security Studies
sflynn@cfr.org

Town of Brookhaven Auditorium
One Independence Hill
Farmingville, New York

10:00 a.m.
May 7, 2007

**“A Manageable Risk:
Assessing the Security Implications of Liquefied Natural Gas and
Recommendations for the Way Forward”**

by
Stephen E. Flynn, Ph.D.
Jeane J. Kirkpatrick Senior Fellow
for National Security Studies

Chairman Cummings, and distinguished members of the Subcommittee on Coast Guard and Maritime Transportation. I am honored to appear before you this morning to discuss the security issues associated with the growth of the LNG industry within the United States. Given the location of this field hearing in Farmingville, NY and the interest it has generated with so many of the people gathered here today, I will also offer my assessment of the security risk associated with the Broadwater Energy proposal for Long Island Sound.

I have previously testified before the Senate Homeland Security and Governmental Affairs Committee on April 27, 2005 and most recently on March 19, 2007 on the potential security risk associated with the chemical and petrochemical industry within the United States. In that testimony, I made the case that many of these facilities represent the military equivalent of a poorly guarded arsenal of weapons of mass destruction. Deadly chemicals including chlorine, anhydrous ammonia, hydrogen fluoride, boron trifluoride, cyanide, and nitrates are often stored in large quantities in densely populated areas adjacent to important infrastructures, such as water treatment plants, bridges, energy facilities, and transportation hubs. I suggested that it was perplexing that a nation that has expended so much blood and treasure searching for weapons of mass destruction in Iraq, would allow what could become their equivalent to sit largely overlooked on U.S. soil. I also pointed out that it is prudent to recall, that on September 11, 2001, Al Qaeda did not import weapons of mass destruction; they converted four domestic airliners into them.

Like many students of terrorism, I believe that Al Qaeda or one of its growing numbers of radical jihadist imitators will attempt to carry out a major terrorist attack on the United States within the next five years. At the top of the list of likely targets is the chemical and energy industries. Al Qaeda has been acquiring experience in these kinds of attacks in Iraq and Saudi Arabia. Between January 2004 and March 2006, insurgents successfully targeted oil and gas facilities and pipelines in Iraq at a cost of more than \$16 billion in lost oil revenues. Since January 2007, there have been a number of deadly attacks involving chlorine tank trucks. The details of their tactics are shared in Internet chat rooms. Further, many of the foreign insurgents have returned or will return to their native countries with the experience and practical skills of successfully targeting these kinds of facilities.

While the safety and security issues associated with the chemical and petrochemical industries are real, it is also a risk we must roll up our sleeves and strive to effectively

manage. The chemical and energy sectors play an indispensable role in the U.S. economy and in supporting our way of life. We need chemicals for everything from making our drinking water drinkable, to manufacturing most of the things we take largely for granted, ranging from automobiles to household cleaning products. Much of the energy we use to heat our homes, to power our factories and stores, and to move us around this vast country requires the efficient and reliable operation of industrial facilities that can safely handle and process vast quantities of chemicals.

The debate over the safety and security of liquefied natural gas (LNG) must be placed against this context of the risk associated with other hazardous substances that are prevalent throughout the U.S. economy. It also must be evaluated against the risks attendant to our reliance on other energy sources. My overall assessment is that if fashioned correctly, the construction of LNG facilities within U.S. waterways and the growth in the number and frequency of LNG shipments to the United States by LNG tankers is both a risk we must and can manage. However, it will require an important shift in the approach by which America has approached the port and waterway security issue both prior to, and even since 9/11.

The United States will need to import a growing amount of LNG to satisfy a rising demand for natural gas, particularly to support electrical power generation. Imports are required because the overall North American production of natural gas will stay flat for the foreseeable future. U.S. natural gas reserves are actually declining and increases in Canadian and Mexican exports via pipeline are barely able to make up the difference. For instance, in 1990 US domestic production satisfied 95 percent of total consumption. By 2003 this figure dropped to 85 percent and it continues to drop. The only way to meet the rise in demand is to import natural gas by cooling it to a liquid state, and moving it in specially-designed tankers. This will translate into the need for additional facilities within the United States that can receive these tanker shipments and convert LNG back into its gaseous form.

I am supportive of the imperative to improve energy conservation in an effort both to reduce our dependency on imported energy and to reduce the damage we are doing to the environment. However, conservation alone will not make up for the need to import LNG for the foreseeable future. The U.S. population has grown from 200 million in 1967 to 300 million in the fall of 2006. Today, North American natural gas production is operating near full capacity, but America's population is projected to reach 400 million as soon as 2043. Adding another 100 million Americans over the next 37 years will translate into a greater demand for energy, particularly for electrical power, regardless of what we can do and must do to embrace energy conservation. The alternatives to natural gas are to expand the number of coal-fired power plants and nuclear power plants. These alternatives clearly carry their own associated risks for the environment, and potentially for security as well.

For a long time, energy was cheap, reliable, and its source was largely invisible for the vast majority of Americans. Those days are gone. Energy will cost more, it will be more susceptible to disruption by both natural and man-made sources, and the sources for

producing it cannot be kept out of sight and out of mind. As a society, we will have to have an adult-like conversation about how we manage the risks associated with our continued reliance on the energy sector. It is not in our national interest to allow “Not-in-My-Backyard” or NIMBY arguments, shielded behind hyperbole over the safety and security issues that are always inherent in the production, transport, and distribution of energy, to carry the day.

Let me be clear. There are serious security issues associated with the LNG industry as there are with the operation of oil and gas refineries, power plants, and the transportation and storage of hazardous chemicals associated with the energy sector. Most recently, I have written of the danger to Boston should an LNG tanker be attacked by two small boats manned by suicide attackers armed with the latest generation of Improvised Explosive Devices (IED). In my most recent book, *The Edge of Disaster*, I wrote a hypothetical scenario that I adapted from the October 2, 2002 Al Qaeda attack on the 157,000-ton crude oil tanker *Limburg* in the Arabian Sea. In it, I outlined the likely consequences of a successful attack on an inbound LNG tanker as the ship makes its final turn to transit to the Distrigas terminal on the entrance of Boston’s Mystic River. The use of explosives with sufficient force to penetrate the hull in two places 150 feet apart, and to breach the interior holding tanks, would send a torrent of liquefied gas into the water. Once it comes into contact with the warm air outside, it would start to vaporize, and ignite as a result of the fire caused by the suicide attack. The fire would burn at 3,000 degrees Fahrenheit for thirty minutes, throwing off enough heat to incinerate everything within four-tenths of a mile of the vessel. This includes steel, which melts at 2,300 degrees Fahrenheit. As recently demonstrated by the tanker fire in Oakland, California on April 30, 2007, should the burning hull drift close enough to the Tobin Bridge, it would melt the asphalt roadway and weaken the steel to the point where the bridge would have to be demolished. There also would likely be secondary fires caused by the igniting of the jet fuel storage tanks that service Logan Airport. Given the number of people living and working on Boston’s waterfront and the difficulty of quickly evacuating such a congested area, the immediate lost of life is likely to be 10,000 or more. There would be a large number of subsequent fatalities due to inadequate capacity at hospitals to treat all the burn victims.

This is a frightening scenario, but it is not one that should be used to suggest that LNG always poses an unacceptable risk to the general public. Rather it highlights that the location of an LNG facility and the transit route of the LNG tankers that dock at that facility is the critical ingredient in assessing the safety and security risk. There is no explosion or “mushroom cloud” associated with an LNG fire. Because it is stored at such an incredibly cold temperature, it is difficult to ignite liquefied natural gas. It must first spill out of the hull and turn into a vapor. Once the gas does ignite, it burns very hot but the range of the fire would be contained to under one-half a mile. Also, unlike a crude oil spill, once an LNG fire burns itself out, there would be no natural gas left over to contaminate the maritime environment.

My recommendation for preventing the hypothetical scenario I outlined for Boston Harbor is to construct a replacement LNG facility on a more remote location near the

harbor's entrance or to place it further offshore. If an LNG tanker did not need to transit within one mile of a densely populated area, it makes a far less attractive target for a suicide attack by terrorists. This is because while the fire would be spectacular to watch, the consequences would not. The human casualties would be limited only to the attackers themselves and the crew of the tanker, especially if there was a security zone set up around the ship that prohibited the boating public from getting too close to it.

This brings me to the Broadwater Facility proposal. The proposed location of the facility is 10.2 miles from Connecticut and 9.2 miles from New York. The 2 to 3 transits per week made by tankers arriving through the Race at the eastern end of Long Island Sound would not put the potential burn-radius in contact with any population center. In short, a successful attack on this facility or on the tankers traveling to this facility would not endanger the general public. As such, it can offer no real appeal to terrorists who are intent on causing mass U.S. casualties.

However, there is a different kind of security risk associated with the proposed Broadwater facility and for other LNG facilities located offshore or in remote locations. That risk is that these facilities are likely to make attractive economic targets. This will particularly be the case in the northeast and other regions as they become more dependent on natural gas for electricity. By 2010, close to 50 percent of New England's electricity will be generated by natural gas. Should the Broadwater facility be constructed as designed, it will provide nearly one-third of all the daily natural gas needs for Connecticut and Long Island. Accordingly, an attack on an unprotected LNG facility could lead to long-term blackouts or brown-outs. As such it is important to undertake stepped-up security measures to protect these facilities even if the risk of human casualties is low. This applies as well to other critical facilities within or adjacent to American waterways such as nuclear power plants and offshore mooring bases that support the offload of shipments by large oil tankers.

One potentially positive result of the surge in public interest surrounding the safety and security of new LNG facilities and shipments is that it provides an opportunity to point out the extent to which Americans are becoming increasingly dependent on energy infrastructure that must operate within a maritime and coastal environment. This dependency brings with it greater vulnerability should our adversaries choose to carry out the kinds of attacks on critical infrastructure that are becoming more commonplace in Iraq and elsewhere in the Middle East. As such the debate over LNG along with the 9/11 attacks should be a wake up call: the United States can no longer rely on the relative safety of the Atlantic and Pacific Oceans when it comes to protecting what is both valuable and vulnerable within and alongside U.S. harbors and waterways.

In the post-9/11 security environment, we must put in place on America's waterways the means to conduct something akin to community policing. This would represent a sharp departure from our current posture that relies on providing nominal resources to the U.S. Coast Guard and only token state and local harbor patrols. The Coast Guard is an agency that is roughly the size of the NYPD with responsibility for 3.36 million square miles of water and 95,000 miles of coastline. Prior to 9/11, it was already tasked with more

missions than it has resources and much of its operational assets and shore facilities are operating well beyond their design-life. Succinctly stated, for more than two decades the service has been aging, and not gracefully. As such it is in no position to provide anything more than an episodic patrol presence, even in the busiest of waterways such as Long Island Sound or the Port of New York and New Jersey. No state or community has undertaken efforts to fill this void with the exception of the relatively modest efforts by Los Angeles and the city of New York.

What is required is a national capacity to maintain a regular “cop-on-the-beat” presence in waterways proximate to critical infrastructure. Such a presence offers both a deterrent and enhances the probability of detecting a terrorist operation before it is launched. This is because an act of sabotage on a maritime facility requires a considerable amount of planning. With only one opportunity to use a suicide attacker, terrorist operatives must undertake surveillance, and conduct practice runs. If they brush up against a patrol presence as they probe a potential terrorist target, they are likely to back down because they will evaluate the risk of failure as too high. However, if they find no meaningful surveillance and interception capability in place, they will have ample opportunity to work out the details associated with their plan of attack. Once an attack is underway, it is extremely difficult to deploy a response to protect a targeted asset. This is true even during a vessel escort of an inbound LNG tanker. In a restricted waterway, there is a very limited window to detect a fast-moving boat and conclude that it poses a real threat. Even with detection, it is hard to shoot disabling fire at a fast-moving small boat from another moving vessel. In most instances, the entire detection and attempted-interception phase may be as short as 20 seconds. In short, the best opportunity to deter and detect a would-be terrorist is when they are probing a target, not when they are actually attacking it. To capitalize on that opportunity, there needs to be an ongoing patrol presence, not an episodic one.

I have examined the Coast Guard Report on Broadwater Energy LNG Proposal, released on September 21, 2006. I concur with its finding that Long Island Sound is suitable for LNG traffic and the operation of the LNG facility, but that additional measures would be necessary to responsibly manage the safety and security risks associated with this project. Specifically, there would need to be a larger ongoing patrol presence in the center of Long Island Sound to include additional Coast Guard, state, and local assets. I would add that privately maintained patrol assets could be used to augment those that are publicly maintained. I also agree with the report’s conclusion that additional firefighting resources should be available to help manage the fire risk associated with such a large and critical facility.

Frankly, the major findings of the Coast Guard’s Report on Broadwater could be extrapolated to the issue of locating LNG facilities nationwide. First, there is no serious risk to public safety as long as the facility and the vessels that transit to them are at least one mile away from a population center. Second, the security risk connected with terrorists potentially attacking these facilities is a manageable one as long as there are enough patrol assets available to routinely monitor the maritime environment in proximity to these and other critical maritime assets. Managing the risk will require a

new commitment in resources at the federal, state, and local levels. Specifically, I would recommend that the federal government undertake a maritime version of the U.S. Department of Justice's Community Oriented Policing Services (COPS) program to bolster the capacity of state and local law enforcement agencies to hire additional police officers and procure and maintain small boats to support an enhanced presence to safeguard the safety and security of America's waterways.

Let me conclude by offering a final caution. It is important that coastal states and communities around the United States actively work to find ways to manage the risk associated with LNG facilities as opposed to reflexively engage in a fight to oppose them. I worry that the NIMBY impulse that is so strong here in the Northeast and also along the California coast will leave the country in a situation where virtually all the new LNG infrastructure will be concentrated in the Gulf of Mexico and along the Gulf Coast. This is a serious problem as Hurricanes Katrina and Rita demonstrated. After those two storms, gas markets lost ten percent of their capacity nationwide in the last four months of 2005 leading to soaring natural gas prices that hit New Englanders particularly hard. Beyond the pocketbook issues, with a growing part of our electrical grid becoming more dependent on power plants fueled by natural gas, future powerful hurricanes in the Gulf may result in the lights literally going out for large sections of the nation. Current climate change projections indicate that the 100-year storm will be a 10-year storm by 2050. This translates into the Gulf region becoming an increasingly risky place to concentrate so much of the nation's energy infrastructure. Accordingly, it behooves us to have adequate geographic dispersion of the LNG infrastructure.

Thank you and I look forward to responding to your questions.

Stephen Flynn is the author of *The Edge of Disaster: Rebuilding a Resilient Nation* (Random House, 2007) and the critically acclaimed and national bestseller, *America the Vulnerable*. Dr. Flynn is the inaugural occupant of the Jeane J. Kirkpatrick Chair in National Security Studies at the Council on Foreign Relations and is a Consulting Professor at the Center of International Security and Cooperation at Stanford University. He ranks among the world's most widely cited experts on homeland security issues, including providing congressional testimony on eighteen occasions since 9/11. He spent twenty years as a commissioned officer in the U.S. Coast Guard, retiring at the rank of Commander. During his time on active duty he had two commands at sea, served in the White House Military Office during the George H.W. Bush administration, and was director for Global Issues on the National Security Council staff during the Clinton administration. He holds a Ph.D. and M.A.L.D. from the Fletcher School of Law and Diplomacy and a B.S. from the U.S. Coast Guard Academy.

Stephen Flynn is the author of The Edge of Disaster: Rebuilding a Resilient Nation (Random House, 2007). He is the inaugural occupant of the Jeane J. Kirkpatrick Chair in National Security Studies at the Council on Foreign Relations. Dr. Flynn served as Director and principal author for the task force report “America: Still Unprepared—Still in Danger,” co-chaired by former Senators Gary Hart and Warren Rudman. Since 9/11 he has provided congressional testimony on homeland security matters on seventeen occasions. He spent twenty years as a commissioned officer in the U.S. Coast Guard including two commands at sea, served in the White House Military Office during the George H.W. Bush administration, and was director for Global Issues on the National Security Council staff during the Clinton administration. He holds a Ph.D. and M.A.L.D. from the Fletcher School of Law and Diplomacy and a B.S. from the U.S. Coast Guard Academy.